

Claims

1. An axial fan in which an impeller (1) comprises a hub (2), motor-powered so that it rotates about its own central axis (3) in a predetermined direction of rotation (V), and a plurality of blades (5) extending from the hub (2) in directions transversal to the axis (3); the hub (2) having a cup shape and being formed by a bottom wall (6) and a ring-shaped side wall (7); the bottom wall (6) having a plurality of long ribs (20) arranged in a radial direction and extending in height towards the hub (2) cavity, each of the ribs (20) abutting on an internal face of the ring-shaped side wall (7) and delimiting, together with said ring-shaped side wall (7), a corner area of the bottom wall (6) positioned in front of the rib (20) with reference to the direction of rotation (V); the fan being characterised in that each corner area has a through-hole (9) for discharging any debris, in particular water, sand, soil or sludge, from the hub (2) cavity to the outside of the hub (2).

2. The fan according to claim 1, characterised in that the through-holes (9) are evenly distributed along a circle centred on the axis (3) and close to the ring-shaped side wall (7).

3. The fan according to claim 1 or 2, characterised in that the through-holes (9) have a substantially triangular prismatic shape.

4. The fan according to any of the foregoing claims, characterised in that in each of the said corner areas a through-hole (9) is delimited by at least three walls (10 - 15), of which a first wall (10) substantially acts as an extension of the ring-shaped side wall (7).

5. The fan according to any of the foregoing claims, characterised in that in each corner area a through-hole (9) is delimited by at least three walls (10 - 15), of which a second wall (11) substantially acts as an extension of the rib (20).

35 6. The fan according to any of the foregoing claims,
characterised in that, with reference to the direction of the axis
(3) and to the direction of rotation (V) of the hub (2), each
through-hole (9) is delimited by at least three walls (10 - 15), of
40 which a first flat external wall (10) lies in a plane at a right
angle to a radial direction and to the bottom wall (6).

7. The fan according to any of the foregoing claims,
characterised in that, with reference to the direction of the axis
(3) and to the direction of rotation (V) of the hub (2), each
45 through-hole (9) is delimited by at least three walls (10 - 15), of
which a second flat rear wall (11) lies in a plane parallel with a
radial direction and is angled backwards by a predetermined angle
(α) relative to the direction of the axis (3).

50 8. The fan according to any of the foregoing claims,
characterised in that, with reference to the direction of the axis
(3) and to the direction of rotation (V) of the hub (2), each
through-hole (9) is delimited by at least three walls (10 - 15), of
which a third flat internal wall (12) lies in an oblique plane
55 relative to a radial direction and at a right angle to the bottom
wall (6).

9. The fan according to any of the claims from 6 to 8,
characterised in that, with reference to the direction of the axis
60 (3) and to the direction of rotation (V) of the hub (2), the first
and second walls (10, 11) converge towards a rear, external curved
vertex wall (13); the second and third walls (11, 12) converge
towards a rear, internal curved vertex wall (14); and the first and
third walls (10, 12) converge towards a front curved vertex wall
65 (15).

10. The fan according to any of the claims from 7 to 9,
characterised in that the predetermined angle (α) is between 30° and
70 60°.

11. The fan according to claim 10, characterised in that the
predetermined angle (α) is equal to 45°.